The Impact of Wal-Mart Supercenter Food Store Sales on Supermarket Concentration in U.S. Metropolitan Areas

by

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Abstract

Wal-Mart's 1999 sales in its Supercenter stores will rival that of Kroger, the leading national supermarket chain. Estimated at $45-47 billion in sales representing growth of 40% from $32 billion in prior year sales, Wal-Mart's growth has been accomplished without expansion by acquisition or merger. This amazing growth in sales was achieved by capital investment in building new or reformatting existing Wal-Mart stores with the Supercenter format, a hypermarket like store complete with general merchandising and full size supermarket areas.

Currently the number of Wal-Mart Supercenters exceeds 721. Wal-Mart opened 275 new Supercenters during 1998 and 1999 and will continue the pace bringing the total number of Supercenters to over 1,400 by the year 2005. These new Supercenters will affect the concentration of food retailers. Most of the reformatting has been in smaller cities and rural areas that tend to have less organized labor markets.

This study finds Wal-Mart Supercenter entry had little impact on food seller concentration in metropolitan areas between 1993 and 1999. Wal-Mart entered 54 of the largest 100 metro areas. Wal-Mart tended to enter cities in the south and east. There is no correlation between entry and city size. Multiple linear regression analysis however indicates that Wal-Mart's market shares are highest in lower income and smaller metro areas.

Key Words: Wal-Mart, market concentration, *de novo* entry, food retailing.

"When Wal-Mart sneezes, the entire retail-food industry goes into conniptions" [1]

1. Introduction

The unprecedented growth in grocery sales by the Wal-Mart stores reached $45 billion[2] in 1999. Rivaled only by Kroger's sales of $45.5 billion, Wal-Mart's apparent sudden appearance at the top of the grocery retailer list comes on the heels of capital expenditure for reformatting existing Wal-Mart stores and constructing new Wal-Mart stores with the Supercenter format. The newest mainstay of Wal-Mart's empire, the Supercenter, incorporates the full size, traditional mass merchandise store with a full size, full service supermarket. This hypermarket format, which is approximately 70% nonfood, is a major reason why Wal-Mart ranks second behind Kroger. When the ranking is based only on supermarket sales, Wal-Mart sold $15 billion in 1999[3]. By this metric, they are the 5th largest supermarket chain in the U.S. By either metric, continued capital expenditure for reformatting and new construction of Supercenters over the coming years will make Wal-Mart one of the leading grocery retailers and possibly the top grocery retailer, in the United States.

This paper examines the market position of Wal-Mart stores in several metropolitan areas to determine what impact Wal-Mart has had on the supermarket concentration in the U.S. First, an overview of the U.S supermarket concentration is presented. This paper then examines the concentration of supermarket sales in metropolitan statistical areas where Wal-Mart operates a Supercenter. The historical concentration of leading supermarkets in each area is compared to Wal-Mart's share. We will test the hypothesis that Wal-Mart has had a significant effect on the retail concentration of supermarkets by entering the grocery retailing.

[1] Gary Giblen, managing director of Bank of America Securities, (Ghitelman, 1999a).
[2] Estimated 1999 sales, *Supermarket News* Jan. 24, 2000.
[3] *Supermarket News* Jan. 24, 2000.

2. Total U.S. Supermarket Sales and Wal-Mart's Share

Sales in the nations supermarkets have steadily risen from $292.0 billion in 1993 to an estimated $363.3 billion for 1999. The top four supermarket chains accounted for a relatively steady share of these sales in the mid nineties, around 23%. Steady four-firm national concentration is probably due to few mergers occurring during that period and the latent effects of over zealous merger and leveraged buyout activity of the 1980's (Cotterill, 1991). A new wave of supermarket mega-mergers of the late nineties culminated in a sharp increase in the national supermarket four-firm concentration level to 43% in 1999[4]. Table 1 shows the historical supermarket sales and the amount attributed to the four leading firms from 1993 to 1999. Kroger, the nations leading retailer purchased the Fred Meyer chain, the Texas division of Winn-Dixie, and Pay Less Supermarkets adding more than $15.1 billion in sales to its share. Albertson's purchased the fifth largest retailer in 1997, American Stores, with sales of $19.9 billion. Safeway purchased Randall's Food Markets, Carr-Gottstein and Dominick's. These huge mergers, unprecedented in the food retailing, account for the huge jump in national supermarket concentration.

Table 1. Historical Supermarket Sales and Leading Four-firm Share, Total U.S. 1993-1999

	1993	1994	1995	1996	1997	1998	1999
Supermarket Sales ($ mil.)	292.0	301.0	311.7	323.2	334.5	346.1	363.3 [a]
Leading Four-firm Sales ($ mil.)	67.3	68.9	70.3	75.0	82.8	88.8	156.4
CR4	23.2	22.9	22.6	23.2	24.8	25.7	43.0

Source: Progressive Grocer *Marketing Guidebook,* various years.
[a] estimated.

[4] Includes Wal-Mart Supercenter sales of $45.0 billion.

2.1 Wal-Mart Becomes a Major Player

Wal-Mart has been able to establish itself as one of the nations top four grocery retailers by virtue of capital expenditure in its Supercenter format. Traditionally a mass merchandiser with limited grocery offerings in its pilot "box" format store, Wal-Mart opted for expansion into the grocery retailing industry by adding full line supermarkets to existing Wal-Mart locations. This expansion was accomplished by remodeling existing locations to the new Supercenter format and opening new Supercenter stores. This is essentially *de novo* entry, entering new markets without acquisition. This expansion program, which began in the late 80's, has continued steadily and has little chance of slowing. As of January 2000, 721 Wal-Mart Supercenters were open and operating (Food Institute, 2000). Continued expansion plans called for 60 to 65 additional openings during the year 2000 (Zwiebach, 2000). Wal-Mart's extensive expansion establish it as the leading food retailer, based on total store sales, in the United States. David Glass, President and CEO of Wal-Mart states that:

> "This concept took the idea of retailing both general merchandise and food in the same building and created the convenience of "one-stop shopping." It has become our key domestic growth vehicle and will remain so for at least the next 10 years (Wal-Mart *Annual Report*, 1999).

2.2 Exerting Competition in the Market

Wal-Mart gives the other retailers significant competition for consumers as it continues to open more stores across the country (Lewis, 1999). Table 2 breaks down the top retailers in the United States for 1999. Kroger's leading position with $45.4 billion in sales and 12.5% share is bolstered by the acquisition of the Fred Meyer chain in 1998. Wal-Mart's number two position with $45.0 billion in total store sales at its Supercenters equates to 12.4% share of the national retail market. Considering only its Supercenter grocery sales, Wal-Mart would then be 5th in the list of national grocery retailers.

Table 2. Sales and Share of the Leading Supermarket Chains of 1999.

Rank	Retailer	1999 Sales	Share[a]	Cumulative Share
1	Kroger	45.4	12.5	12.5
2	Wal-Mart Supercenter	45.0	12.4	24.9
3	Albertson's	37.6	10.3	35.2
4	Safeway	28.4	7.8	43.0
5	Royal Ahold	20.3	5.6	48.6
6	Delhaize	14.4	4.0	52.6
7	Winn-Dixie	13.3	3.7	56.3

Source: *Supermarket News* Jan. 25, 1999; Jan. 24, 2000; Progressive Grocer *Marketing Guidebook 2000*.
[a] Based on estimated supermarket sales of $363.3 billion for 1999.

What impact Wal-Mart's presence has on competition is a question well worth asking. On the national level, the increased volume of merchandise sold should give Wal-Mart greater bargaining power toward manufacturers. This allows Wal-Mart to be a low price competitor in the marketplace and theoretically take share from other competitors in the market. According to Rich Parkinson, CEO of Associated Food Stores:

> One of the biggest challenges is seeing how the independent sector will compete with the five entities (Wal-Mart, Kroger, Albertson's, Safeway, and Ahold) that control more than 40% of the industry's volume, in terms of relationships with their suppliers. There's no question what impact Wal-Mart's relationship with suppliers has had … what will that mean to vendors and what consequences will it have for independent channels? (Zwiebach, 2000b, p. 9, 15).

However, as we stated earlier, the total store sales figure of $45 billion overstates Wal-Mart's market presence. Wal-Mart's grocery sales is roughly 30% of total store sales or $15 billion. How does the $30 billion in mass merchandise and dry good sales give Wal-Mart any additional purchasing power toward groceries? It may not.

A more important implication may lie in Wal-Mart's supply chain management. According to the *Food Institute Report*, Wal-Mart's inventory spends very little time in warehouses and is the base of Wal-Mart's strong profit growth in the past.[5] If supply management savings responsible for lower costs are passed on to consumers, it would contribute to lower costs in the grocery isles at the Supercenter.

Still, questions are being raised by Wal-Mart competitors about its increased presence in the grocery retailing industry, its strength, and growth. Tom Dahlen, president and CEO of Furr's Supermarkets states, "Obviously the continued growth of Wal-Mart supercenters is an issue;" and Al Plamann president and CEO of Unified Western Grocers adds, "Wal-Mart is getting more aggressive in more areas, and we will continue to see competitive marketplaces all over the United States" (Zwiebach, 2000b, p.9). In the next section, we will investigate whether the share of sales Wal-Mart obtains as it enters individual metropolitan areas has any impact on supermarket concentration. In addition, we will also investigate the impact of Wal-Mart's entry on both the leading and fringe firms in the market.

3. Wal-Mart's Impact in Metropolitan Areas.

We examined the largest 100 metropolitan areas of 1999 for the presence of a Wal-Mart Supercenter using Trade Dimension's M*arket Scope* as a source. Wal-Mart was found in 54 of the MSAs (see Appendix A). The four-firm concentration ratio as well as Wal-Mart's share in these 54 areas where computed for the years 1993 and 1999. In 1993, Wal-Mart operated 12 stores in 8 metropolitan areas averaging 3.2% share. Its highest market share at that time was 10.2% for 3 stores in Tulsa, Oklahoma. The average four-firm concentration ratio for the 54 markets in 1993 was 71.9%.

[5] *Food Institute Report*, November 22, 1999.

By 1999, 188 Supercenters were operating in the 54 metropolitan areas with an average share of 4.8%. Wal-Mart averaged 3.5 stores in each market with as many as 13 stores in Dallas, Texas. The highest share that Wal-Mart attained was in Mobile, Alabama with 16.3% operating 6 stores. The average four-firm concentration ratio for the 54 areas was 75.4%, up 3.5 percentage points from 1993. Wal-Mart's entry, on average, did not lower market concentration.

Wal-Mart has not as yet obtained the leading firm position in any market. Indeed, the current average share of 4.8% and 3.5 stores per metro area does not seem to be a significant stance against the dozens of stores leading retailers typically operate in a mid size or large metropolitan area. According to Ed Comeau, financial analyst at Donaldson Lufkin & Jenrette:

> … Wal-Mart hasn't begun to broach the issue of getting into metro markets, capturing large market shares like the Krogers and the Safeways. Its really just taking a step toward picking up a lot of the incremental business along the path of least resistance in the secondary and smaller markets. … I wouldn't imagine Wal-Mart is a big metro-market threat… (*Supermarket News*, 1999).

Additionally, David Glass adds:

> Supercenters effectively serve a large trade area, but we think there may be some business that we are not getting purely because they may not be as close to the consumer or convenient for small shopping trips (Wal-Mart *Annual Report*, 1999).

3.1 Is there a Pattern where Wal-Mart's has a Significant Share of the Market?

An examination of markets where Wal-Mart has a higher than average share may help to further shed light on the impact on leading firms in local markets. Wal-Mart had established a share greater than 5.0%[6] in 19 of the 54 markets for which data is available. Markets where Wal-Mart's share is lower than 5.0% for this exercise are considered a toe hold position and not a

[6] Colorado Springs CO, McAllen TX, and El Paso TX are omitted from the case study do to the lack of available prior year data. The *Market Scope* included Colorado Springs in the 1998 data and McAllen Texas in the 1999 data, Wal-Mart did not enter El Paso until 1998.

significant factor in the market[7]. We examined these nineteen metropolitan areas in detail to see if any generalities could be identified. Each of the nineteen markets is discussed briefly in Appendix B. Table 3 contains the historic two and four-firm concentration ratio as well as the share obtained by Wal-Mart during the 1993 to 1999 period in these markets.

In the 19 markets with share greater than 5%, Wal-Mart's share was 8.1% on average in 1999, up 4.7 percentage points from 1993. Wal-Mart secured a position in the top 4 grocery retailers in 12 markets; Wal-Mart had the second highest share in Little Rock, third highest in Mobile and Baton Rouge. Wal-Mart's market position was no lower than 7th in this sample.

The average four-firm concentration in 1993 was 73.1% and it rose 2.0 points to 75.1% on average in 1999 in these 19 markets. The change in four-firm concentration level is much lower in these nineteen markets than in the 54 city sample, 2.0 points here compared to 3.5 points in the set of all Wal-Mart markets.

Of these 19 metropolitan areas, there are 6 where Wal-Mart's entry lowered the four-firm retail concentration from 1993 to 1999, Birmingham, Greenville, Columbia, Memphis, Orlando and Wichita. Four-firm concentration went down an average 4.4 points from 1993 to 1999 in these markets.

In the remaining 13 markets, the average four-firm retail concentration went up 4.9 percentage points. In retaliation to Wal-Mart's entry, several chains in 6 of these 13 markets (Dallas, Ft. Worth, Tulsa, Knoxville, Nashville, and Louisville) countered with increased capital expenditure and built more stores. The increase in store base regained lost share and negated any impact Wal-Mart had by entering. This often reduced Wal-Mart's share

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7 The 5.0% level is used as a benchmark share by the antitrust analysts as a cut to determine whether an entrant is a factor in the market or merely has established a toe hold position.

Table 3. Historic Two and Four-firm Concentration and Wal-Mart Share in 19 Metropolitan Statistical Areas

Metro Area		1993	1994	1995	1996	1997	1998	1999	Wal-Mart's '99 Position
Mobile	CR4	86.3	85.0	86.7	87.3	82.0	88.7	86.7	
	CR2	64.6	65.4	62.9	63.6	57.5	58.2	60.3	
	WMT	0.4	2.7	3.3	9.6	12.8	16.4	16.3	3
Little Rock	CR4	74.0	81.7	79.4	78.3	77.7	80.6	83.9	
	CR2	58.1	55.8	57.8	52.8	51.9	57.6	64.7	
	WMT	5.1	12.4	8.3	8.3	10.2	13.1	13.5	2
Tulsa	CR4	61.5	61.5	67.7	58.2	58.2	60.0	63.8	
	CR2	36.8	36.3	39.4	34.6	33.8	33.3	37.6	
	WMT	10.2	17.8	20.5	10.5	11.2	13.1	12.9	4
Baton Rouge	CR4	60.0		60.3	64.3	67.8	72.9	73.8	
	CR2	35.6		42.2	59.1	59.8	56.1	56.1	
	WMT			0.0	1.5	6.1	6.2	11.2	3
Greenville, SC	CR4	89.1			84.4	81.1	78.5	78.9	
	CR2	61.0			64.0	58.3	55.6	56.4	
	WMT				0.0	3.6	6.3	9.7	4
Oklahoma City	CR4	44.2	42.2	35.7	39.0	39.3	43.0	49.8	
	CR2	31.6	27.1	21.9	25.3	27.0	30.8	30.1	
	WMT	1.0	4.5	9.1	5.8	5.7	6.5	9.5	4
Richmond	CR4	72.6		76.4	72.6	74.2	75.4	76.5	
	CR2	48.3		62.4	58.2	55.1	58.0	56.3	
	WMT			0.0	1.7	7.7	7.5	8.4	4
Fort Worth	CR4	63.8	67.2	66.6	65.2	69.6	69.0	67.1	
	CR2	38.1	38.6	37.0	40.8	43.0	41.9	40.4	
	WMT	1.6	5.8	12.8	7.5	7.5	8.0	6.3	6
Columbia, SC	CR4	70.8	68.0	63.1	60.0	57.7	64.1	62.7	
	CR2	41.0	39.8	35.7	34.9	32.0	36.1	32.8	
	WMT		0.0	13.3	7.1	10.2	9.8	7.6	7
Memphis	CR4	74.7	79.2	68.0	67.2	66.5	74.0	71.3	
	CR2	50.9	56.4	44.8	49.9	50.4	52.6	51.6	
	WMT		0	3.8	3.8	5.8	7.2	7.1	5
Nashville	CR4	69.1	70.9	66.4	71.5	71.0	70.7	74.5	
	CR2	52.7	56.8	52.0	56.4	55.7	55.7	61.0	
	WMT	2.5	4.1	8.1	7.4	7.6	7.3	7.2	4
Birmingham	CR4	78.4	75.9	69.9	72.8	75.2	80.0	77.3	
	CR2	62.8	65.0	61.7	61.4	64.5	66.0	63.1	
	WMT		0	3.9	3.4	3.9	4.6	6.4	4

(continues)

Table 3. Continued

Metro Area		1993	1994	1995	1996	1997	1998	1999	Wal-Mart '99 Position
Knoxville	CR4	74.4	76.7	70.9	72.7	72.2	72.7	79.4	
	CR2	62.8	58.7	54.3	55.1	54.8	54.7	60.6	
	WMT		0	6.3	4.5	5.7	6.5	6.0	5
Greensboro	CR4	73.9			63.1	73.1	70.0	79.1	
	CR2	48.0			49.3	49.4	47.5	54.7	
	WMT				0	1.5	2.6	5.9	6
Orlando	CR4	87.5		91.0	91.6	90.1	88.0	85.5	
	CR2	62.2		67.4	66.6	66.6	65.5	62.8	
	WMT			0	1.9	3.6	4.1	5.9	5
Wichita	CR4	84.5			91.1	85.6	83.8	84.2	
	CR2	61.7			77.0	71.9	76.2	69.9	
	WMT				0	5.2	4.9	5.8	4
Dallas	CR4	71.8	70.1	69.1	68.5	70.7	73.4	73.8	
	CR2	41.5	40.0	37.5	39.3	38.7	43.6	43.9	
	WMT	1.4	3.1	4.6	4.4	4.9	4.8	5.8	6
Louisville	CR4	76.6	75.9	74.3	77.4	80.1	76.0	78.2	
	CR2	64.6	62.8	62.6	66.3	67.7	64.0	62.4	
	WMT	0	4.4	5.9	3.8	5.6	5.3	5.6	4
St. Louis	CR4	76.4	76.1	79.6	78.0	80.4	80.8	81.1	
	CR2	55.4	51.0	60.7	58.7	62.6	62.9	63.0	
	WMT	3.1	3.9	8.7	4.7	5.1	5.2	5.2	4
Average	CR4	73.1						75.1	
	CR2	50.8						54.0	
	WMT	3.2						8.2	

Source: Calculated from Trade Dimension's *Market Scope*, various years.

below the pre retaliatory period amount. Wal-Mart Supercenters are not invulnerable.

The increase in concentration in the remaining seven markets seems due to a decrease in the number of fringe firms. In Mobile, Baton Rouge, and Richmond, for example, chains with a toe hold position exit the market after Wal-Mart enters. Wal-Mart did not capture all of these firm's share. The leading retailers in the market gained some of the fringe share and market concentration increased.

In summary, clear pattern of post entry activity occurs in many of these 19 markets. Close inspection of Table 3 indicates that in the first year or two after entry, Wal-Mart gains share from leading retailers. The four-firm concentration drops. Then a period of market shakeup occurs. One of three things may take place. First, retaliation may occur where the leading retailers gain share and the concentration level rises. Wal-Mart often loses share.   The result is a long term increase in the four-firm concentration above the pre entry level. Second, fringe firms exit the market. Part of the share from these firms is captured by market leaders and the concentration rises. Finally, nothing may happen. The market leaders do not retaliate and the fringe firms remain in the market. The result is a decrease in retail concentration. Strategic retaliation by leading firms and the maintenance of a position in the market by fringe firms are indications that barriers to entry do exist in these markets (Gilbert, 1989).

4. Is Wal-Mart Entry Related to Income Level or Market Size?

A key question is, does Wal-Mart tend to enter low income and smaller metro areas? Does Wal-Mart's corporate strategy target a working class segment of the population? We used a Logit model to analyze the importance of metropolitan size and income level on Wal-Mart entry in the 100 top metropolitan area sample. Table 4 shows the results.   The first model indicates a significant negative relationship between median household income (MHI99) and Wal-Mart's presence in the market. This indicates that Wal-Mart is present in metro areas that have lower household income.

The second model regresses Wal-Mart presence on metropolitan size (POP99). Results were insignificant.   Size of the metropolitan area is not a significant determinant of Wal-Mart's presence in the market. The third model, using both independent variables, allows us to draw that same conclusion. Median income was negative and significant while population remained insignificant.

Table 4. Results of Logit Model Regression Analysis.

Independent Variables			Overall Prediction
Constant	MHI99	POP99	
5.39 (10.94)***	-0.0001 (10.37)**		64.0
0.248 (0.760)		-5.4 E-08 (0.189)	53.0
5.52 (10.92)***	-0.0001 (10.12)***	-6.84 E-08 (0.255)	63.0

chi square Wald ratio given in parenthesis. n=100.
*** = significant at the 1% level
**= significant at the 5%

Table 5. Results of Linear Regression Analysis, Dependant Variable=WMTSHR99.

Independent Variables				Adj. R2
Constant	MHI99	POP99	YEARS	
15.56 (3.871)***	-2.38 E -04 (-2.690)**			0.105
6.60 (9.475)***		-1.14 E-06 (-3.455)***		0.171
1.525 (1.299)			0.814 (3.080)***	0.138
10.675 (2.583)**	-1.89 E-04 (-1.841)*	-6.39 E-07 (-1.632)	0.909 (3.774)***	0.337

t ratio given in parenthesis. n=54
*** = significant at the 1% level
**= significant at the 5% level
*= significant at the 10% level

We used linear regression to analyze Wal-Mart's share as a function of median household income, market size and the number of years since Wal-Mart's entry. Table 5 reports the results. In the first model, Wal-Mart's market share in 1999 is regressed on median household income. Results indicate a negative relationship, significant at the 1% level. Wal-Mart has less share in metropolitan areas with higher median household income. Results of a second model that regressed Wal-Mart share on metropolitan size (POP99) also resulted in a negative relationship between market size and Wal-Mart's share. Wal-Mart has greater share in smaller metropolitan areas and areas with lower median incomes.

A third model regressed Wal-Mart share on the number of years since it's entry (YEARS) in the market. The relationship is positive and significant. Wal-Mart has more share as the number of years since entry increases. The final model specifies these three independent variables jointly. It gives similar results, however, there is some multicoliniarity. This model explains more than 33% of the variation in Wal-Mart's share[8]. We conclude that Wal-Mart gains share over time but operates primarily in smaller metro areas with lower average income.

From both the linear and logit analysis, we conclude that Wal-Mart operates in metropolitan areas that have lower average incomes. In addition, Wal-Mart has larger share in metro areas that are both lower in average income and are smaller in size. Also, Wal-Mart gains share over time.

5. Wal-Mart's Future Impact

As suggested by Ed Comeau, the full impact of Wal-Mart's expansion will not be felt until Wal-Mart has captured large market shares in these large metro areas (*Supermarket News*, 1999). At this juncture, it is not all clear that such penetration will ever happen. Supercenters are large "destination" stores, not neighborhood supermarkets. They are not convenient for small shopping trips.

To capture more sales in large market areas, Wal-Mart introduced the Neighborhood market store in test format. A smaller format supermarket designed to get closer to customers, the Neighborhood Market store is the newest growth vehicle. New supermarkets built today exceed 60,000 to 70,000 square feet or larger. Neighborhood Markets are built as a 40,000 square foot store and hold a smaller number of items in this much smaller building. The smaller footprint gives Wal-Mart the flexibility that it needs to acquire the real estate for new stores in dense urban areas. According to Ken Teague, retail consultant at Reach Marketing, the small size would allow Wal-Mart to easily purchase existing store space at the 40,000 square foot size (Ghitelman, 1999a).

Opening stores that are smaller than superstores is not an uncommon strategy in the grocery retailing industry. In the late 1980's, Food Lion embarked on this strategy and achieved one of the fastest growth rates ever observed in the industry. Food Lion would open stores averaging only 25,000 square feet, 10-35% smaller than operating superstores (at that time). Additionally, Food Lion would populate a market with many stores to capture a greater share (Poole, 1991). If Wal-Mart begins a major rollout of the Neighborhood Market stores, it could be very reminiscent of Food Lion's strategy of the late 80's. The Neighborhood Markets would capture share in local neighborhoods not serviced by a Wal-Mart Supercenter. This poses an additional threat to competitors. According to Gary Giblen, managing director of Bank of America Securities: "[a rollout is] certainly going to hurt the smaller players more… It's on the forefront of every CEO's mind." We have yet to see if the roll out takes place or if it has a impact on supermarket concentration.

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[8] Median household income and metro size are significantly correlated at the 1% level with a value .639.

6. Conclusions and Implications for Future Research

Despite it's enormous expansion into the grocery retailing industry beyond its normal mass merchandiser format, Wal-Mart's impact on the supermarket concentration as evidenced by this investigation is negligible at the metropolitan statistical area level. Wal-Mart's impact at this juncture, as described by the CEOs of several of its competitors and market research analysts, focuses primarily on the potential purchasing power Wal-Mart is able to exert on food manufacturers. Power that would enable Wal-Mart to be a low price competitor in the market, a significant challenge for its competitors.

This study investigated the 100 largest metropolitan areas in the U.S. Wal-Mart operates in 54 of these areas. Moreover, only 188 of the 721 Wal-Mart Supercenters are in these 54 areas. The remaining Supercenters are located in non-metropolitan, i.e. rural, areas. This fact also indicates that to date, Wal-Mart is not going head to head with other large supermarket chains to compete for suburban or urban customers. Wal-Mart's full impact on concentration and grocery retailing performance to date has been minimal. Perhaps the future will be different if it expands into major metro areas with its neighborhood Markets as well as Supercenters.

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Appendix A Number of Stores, Wal-Mart Share and Four-firm Concentration in U.S. Metropolitan Areas, 1993 and 1999.

Metro Area	1999 # stores	1999 share	1999 CR4	1993 stores	1993 share	1993 CR4	CR4 changes
Albany-Schen	1	1.7	83.8			87.2	-3.4
Albuquerque	2	4.9	81.8			85	-3.2
Atlanta	11	3.9	72.9			72.2	0.7
Austin-San Marcos	4	4.8	91.7			80	11.7
Baton-Rouge	4	11.2	73.8			60	13.8
Birmingham	4	6.4	77.3			78.4	-1.1
Boston	1	0.3	68			60.4	7.6
Buffalo-Niagra Falls	1	1.4	91.5			76.9	14.6
Charlotte, NC	2	1.9	83			88.1	-5.1
Chicago	3	0.7	75.9			69.6	6.3
Cincinnati	2	1.9	79.5			72.2	7.3
Colorado Springs	4	11	75.4				
Columbia, SC	3	7.6	57.3			70.8	-13.5
Dallas	13	5.8	73.8	1	1.4	71.8	2
Denver, CO	1	0.6	89.7			88.8	0.9
El Paso	2	5.9	63.7			67.2	-3.5
Fort Worth, Arlington	8	8	67.1	1	1.6	63.8	3.3
Gary, Ind	1	2.7	62.1			45.1	17
Greensboro	5	5.9	79.1			73.9	5.2
Greenville	7	9.7	78.9			89.1	-10.2
Harrisburg	1	2.5	68.2			55.9	12.3
Houston	6	2.3	67			62.1	4.9
Indianapolis	2	2.1	78.4			70	8.4
Jacksonville, FL	1	1.3	86.6			91.6	-5
Kansas City	3	4.1	56.8			52.1	4.7
Knoxville	3	6	79.4			74.4	5
Little Rock	5	13.5	83.9	1	5.1	74	9.9
Louisville	4	5.6	78.2			76.6	1.6
McAllen	3	11.1	90.6				
Memphis	5	7.1	71.3			74.7	-3.4
Miami	1	0.8	84.2			77.5	6.7
Milwaukee	1	1	55.6			53.3	2.3
Mobile	6	16.3	86.7	1	0.4	86.3	0.4
Nashville	5	6.5	75.5	1	2.5	69.1	6.4
New Orleans	2	2.7	75.6			72.3	3.3
Norfolk-Virginia Beach	5	4.9	70.8			82.1	-11.3
Oklahoma City	6	9.5	49.8	1	1	44.2	5.6
Omaha, NE	1	2	65.8			68	-2.2
Orlando	7	5.9	85.3			87.5	-2.2
Phoenix	1	0.2	80.7			62.1	18.6
Pittsburgh	3	1.9	68.3			64.1	4.2
Raleigh	1	1.2	79.2			74	5.2
Richmond	6	8.4	76.5			72.6	3.9
St. Louis	8	5.2	81.1	3	3.1	76.4	4.7
San Antonio	2	2	85.9			81.2	4.7
Sarasota	3	7	79.8			87.9	-8.1
Scranton-Wilkes Barre	2	4.7	44.7			55.1	-10.4

Appendix A continued.

Metro Area	1999 # stores	1999 share	1999 CR4	1993 stores	1993 share	1993 CR4	CR4 changes
Springfield, MA	1	2.4	85.4			80	5.4
Syracuse	1	2	76.2			65	11.2
Tampa-St. Pete	2	1.3	91.4			83.6	7.8
Tulsa	6	12.9	63.8	3	10.2	61.5	2.3
Washington DC	3	0.9	79.2			77.4	1.8
Wichita	2	5.8	84.2			84.5	-0.3
Youngstown	1	3.2	56.7			38.7	18
Average	n=188	4.8	75.4	n=12	3.2	71.9	3.5

Source: Trade Dimensions, *Market Scope*, 1994 and 2000.

Appendix B Assessment of 19 Metropolitan Areas with Wal-Mart Share for 1999 Greater than 5%.

1 Mobile, Alabama

Wal-Mart's share in 1993 with one store was 0.4%. The CR4 in 1993 was 86.3% dominated by Delchamp's Inc. share of 43.4%. By 1999, the retail four-firm concentration gained 0.4 points to 86.7. Wal-Mart opened 5 more stores and obtained a 16.3% share, the 3rd largest share in the market. There are several places Wal-Mart could have obtained share. Kroger had a toe hold position with one store and 3.9% share left the market by 1999. Several small independents operators do not appear in the 1999 data indicating they exited the market. They are Big Bear, Lewis Bear, National Super Markets, IGA, and Stewart King & Mckenzie, a total of 6.3% share[9]. Mobile seems to be a market where Wal-Mart has gained some share at least in part from smaller retailers that exited the market.

2 Little Rock, AR

In 1993, Wal-Mart operated one store with 5.1% share. By 1999, Wal-Mart operated 5 stores with 13.5% share, number two in the market. The four-firm concentration rose from 74.0% in 1993 to 83.9% in 1999. Prior to 1996, the Little Rock grocery industry was largely dominated by two chains. A regional chain, Harvest, spun off from Safeway after its LBO in 1986, operated 23 stores and had a leading 34.1% share, and Kroger at number two with 11 stores and a 24.0% share. In 1996, Harvest went bankrupt. Those stores, operated by Supermarket Investors Inc. in 1999, operated 17 stores and had a significantly smaller share, 12.6%. By 1999, Kroger operated nearly double the number of stores it had in 1993, its 1999 share was 51.2% of the market. Wal-Mart's entry and expansion in this market is clearly a secondary event. Kroger's increased store base and dominant firm status, over 50% share, has dramatically increased market concentration.

3 Tulsa, OK

In Tulsa, Albertson's and Wal-Mart are the only national chains in the market in competition with numerous independent retailers. In 1993,Wal-Mart had 3 stores and a 10.2% share and increased to 6 stores and 12.9% share in 1999. The four-firm concentration went from 61.5% in 1993 to 63.8% in 1999. In the period to 1999, possibly in retaliation to Wal-Mart's entry, Albertson's nearly doubled the number of supermarkets it operated, increasing from 6 to 11, and capturing a market leading 21.5% share. Wal-Mart had little impact on the overall concentration in this market.

4 Baton Rouge, Louisiana

Wal-Mart entered Baton Rouge in 1996 with 1 store and a 1.5% share. Wal-Mart increased its store base to 4 with 11.2% share in 1999 third highest in the market. The four-firm concentration in 1996 was 64.3% and increased to 73.8% in 1999. The two leading retailers, Winn-Dixie and Albertson's combined share in 1996 was 49.1% and increased to 56.1% in 1999. During the time to 1999, the number of stores operated by the A&P supermarket chain went down from 8 stores with 9.5% share to 3 stores with only 3.4% share. Schwegmann, which operated 3 stores with 5.7 % share in 1996 was not in the 1999 data. Delchamps, which changed

[9] For each case study unless otherwise noted, the author has referred to the Trade Dimension's *Market Scope*, 1994 through 2000.

to the Jitney Jungle name by 1999 lost 2.7 percentage and went from 9.2% in 6 stores in 1993 to 6.5% and 5 stores in 1999. Wal-Mart and the two leading retailers gained share from the decrease in share of A&P and Delchamps as well as the exit of Schwegmann. They did not capture share from independent stores. Wal-Mart's entry and expansion is secondary to changes in the fringe firms in the market.

5 Greenville, South Carolina

Wal-Mart's appearance in Greenville occurred in 1997 with 2 stores and 3.6 percent share. By 1999, Wal-Mart had opened 5 more stores and obtained a share of 9.7%, fourth highest in the market. The four-firm concentration decreased from 81.1% to 78.9% in that period.

The loss of several independent operators serviced by Merchants Distributors was the significant change in the market participants. Merchants Distributors had serviced as many as 22 stores in 1997. That number was reduced to 13 in 1999 accounting for only 4.2%, down from 8.0% in 1997. Additionally, Winn-Dixie's share went down 4.0 points during the same period. Wal-Mart's increase in share has come from the small retailers that exited the market and from the loss of share by Winn-Dixie. Wal-Mart's entry has helped reduce the four-firm concentration in this market.

6 Oklahoma City, OK

In 1993, Wal-Mart's share with 1 store was 1.0%. In the 6 years to 1999, Wal-Mart opened 5 more Supercenters and gained 8.5 percentage points to a share of 9.5%. In 1993, the CR_4 was 44.2%. By 1999 the concentration was still low at only 49.8%. The market was populated by many different regional chains and only two national chains, Albertson's and Food Lion. Food Lion had exited the market its expansion plans to Texas cut[10] leaving Albertson's as the only national chain competitor to Wal-Mart. When Food Lion left the market having 5.4% in 1993, this created a shakeup in the leading retailers in the metro area. The large number of participants in this market indicate that Wal-Mart's share did not come from any single competitor or segment and was not an influence on the concentration in this very competitive, unconcentrated market.

7 Richmond, VA

In 1996, Wal-Mart entered Richmond and commanded 1.7% share with a single store. By 1999, Wal-Mart opened 5 more Supercenters to obtain an 8.4% share. The four-firm concentration in 1996 was 72.6% and increases to 76.5% in 1999. However, the concentration of the leading two firms (Ukrops and Food Lion) goes down from 58.1% to 56.3%.

Between 1996 and 1999, A&P exited Richmond giving up a 4.2% share from its 12 stores. Also in that time, Winn-Dixie's share went from 9.0% to 4.6% going from 11 stores to 8. Wal-Mart's entry, if responsible for A&P's exit and Winn-Dixie's fewer stores, as well as the decrease in CR2, did have a competitive effect on the Richmond market.

8 Ft. Worth

Wal-Mart's share in 1993 with 1 store was 1.6%. Its share rose to a high point in 1995 with 12.8%, then subsequently lost share to 6.3% with 8 stores in 1999. Overall the four-firm concentration increases 3.3 points from 1993 to 1999, 63.8% to 67.1%. Food Lion withdraws from the Texas region in 1995(see also Dallas, TX; *Food Institute Report*, Jan. 10, 1994). Food

[10] Food Institute Report, 1994.

Lion's share was 8.4% in 1993. In an attempt to capture part of Food Lion's share and regain share lost to Wal-Mart, Albertson's, Kroger, and Tom Thumb increased their store base and gained share. Wal-Mart lost a large amount of share. Although Wal-Mart's initial entry caused a decline in the concentration, its entry and expansion has not had a significant influence over the long term.

9 Columbia, SC

In 1995, Wal-Mart entered Columbia and commanded a 13.3% share of the market with 2 stores. By 1999, Wal-Mart's share went down to 7.6% even after opening an additional store. The four-firm concentration level drops from 63.1% to 62.7% from 1995 to 1999. In the years leading to 1999, Food Lion, Kroger, Publix, and Piggly Wiggly add additional stores in this market. A&P left Columbia in 1995 having a two store toe hold position in the market. Wal-Mart initially garnered a large amount of its share from the leading retail chains which resulted in a reduction in the concentration (see Table 3), but eventually lost share to expanded capacity and competition from several large chain operators.

10 Memphis

Wal-Mart entered Memphis in 1995 and captured 3.8% share with one store. Its share increased to 7.1% by 1999. Prior to Wal-Mart's entry, the four-firm concentration in 1994 was 79.2%. The concentration was down to 71.3% in 1999. The Fleming and Supervalu wholesale companies lose approximately 20.1 share points from 1995 to 1999. They supplied 68 independent stores for a combined share of 46.1% in 1995, but by 1999 that share eroded to 26%. Albertson's entered Memphis in 1997 and by 1999 had 13.8% share and 13 stores, second highest in the market. Kroger, the market leader, increased its number of stores from 25 to 31 during 1995 to 1999. In this market, Wal-Mart and Albertson's obtain share from the small retailers that exit. Together they had a competitive effect on the retail concentration despite Kroger's increased capacity.

11 Nashville, TN

In 1993,Wal-Mart's 1 store had a market share of 2.5%. By 1999, its share increased to 6.5% with 5 stores. During the 1993 to 1999 period, the four-firm concentration rose from 69.1% to 74.5%. During that time, several chains entered or exited the Nashville metropolitan area. Bruno's Food World, H. G. Hill and Red Food Stores had a combined share of 19.4% in 1993. Each exited the market by 1999. Albertson's and Bi Lo entered the market for a combined share of 9.5%. Kroger added eight stores to its existing 29 stores and gained 8.9 share points to dominate the market with 51.7% share. Kroger's clear dominance and increased capacity in this market counter Wal-Mart's entry and expansion. Wal-Mart has had no competitive effect in this market

12 Birmingham, AL

Wal-Mart entered Birmingham in 1995, it captured 3.9% share with 1 store. Wal-Mart's share increased to 6.4% and 4 stores in 1999. The retail concentration in 1995 was 69.9% and increased to 77.3% in 1999. Closer inspection of Table 3 shows the concentration prior to Wal-Mart's entry was 78.4% in 1993. Compared to 77.3% in 1999, the concentration has gone down, but has fluctuated widely during that time.

The fluctuation in the concentration is due to the changing positions of several leading retailers in the market. The number of stores operated by Bruno's Food World decreased from 40 to 37 and its share was reduced substantially from a market leading 47.7% in 1995 to 38.7% in 1999. Winn-Dixie increased the number of stores it operated from 14 to 25 and captured 11.4 more share points to 25.4% share in 1999. The Birmingham market is in a state of transition. Wal-Mart's impact in this market is muted by the conduct of other retailers.

13 Knoxville, TN

In 1995, Wal-Mart entered the market with one store and captured 6.3% share. By 1999 its share had eroded to 6.0% despite opening two additional stores. The four-firm concentration went up from 70.9% in 1995 to 79.4% in 1999. Bi Lo, Food Lion, Kroger and K VA T Food Stores increased their store base in that period. Wal-Mart's presence in Knoxville has been countered by the aggressiveness of other chains. Despite the initial decrease in the two and four-firm concentration level, the counter measures of the leading firms reasserts their dominance and recapture lost share. Wal-Mart's entry has had no competitive effect in this market.

14 Greensboro, NC

In 1997, Wal-Mart entered with one store and captured a 1.5% share. By 1999, it added 4 stores and increased its share to 5.9%. The four-firm concentration increased from 73.1% to 79.1% in that same period. From 1997 to 1999, the leading retailers, Food Lion, Harris Teeter, Lowes and Bi Lo gain share while Kroger exits the market giving up a 9.7% share. Despite its entry and expansion, Wal-Mart had little impact on the retail concentration in this market.

15 Orlando, FL

Wal-Mart entered in 1996 with 1 store and 1.9% share. Its share increased to 5.9% with 7 stores by 1999. The four-firm concentration went down 6.1 points to 85.5% in 1999 from 91.6% in 1996. The leading firms, Publix, Winn-Dixie, and Albertson's each increase the number of stores during the 1996-1999 period but do not capture additional share. Wal-Mart's entry and expansion in this market was able to reduce the concentration and have a competitive effect.

16 Wichita

When Wal-Mart entered in 1997, it captured 5.2% of the market with 2 stores. By 1999, Wal-Mart's share increased to 5.8%. The four-firm concentration went down 1.4 points, 85.6% to 84.2% in the same period. Dillon Food Stores is clearly the market leader. It had a very dominant position with 60.9% share in 1997. Despite adding an additional store, Dillon's share went down to 59.7 in 1999, a loss of 1.2 points. At this juncture, Wal-Mart has captured most of its share from the fringe firms in the market and not from the market leader. Wal-Mart as yet has not had a major effect on concentration in this market.

17 Dallas, TX

In 1993,Wal-mart had 1 store and 1.4% share. By 1999 it had 13 stores and 5.8% share. The four-firm concentration increased 2.0 points from 71.8% to 73.8%. In a counter move to Wal-Mart's entry, Albertson's, the market leader, added 21 additional stores, and increased its share from 21.0% to 23.8%. Tom Thumb and Kroger also added additional stores. Therefore, the additional capacity of the leading firms counters Wal-Mart's entry. Wal-Mart's entry has not had a competitive impact in this market.

18 Louisville

In 1994, Wal-Mart entered Louisville with one Supercenter and commanded a 1.7% share. Since then, Wal-Mart established 3 more Supercenters and obtained 5.6% share. The four-firm concentration rose 2.3 percentage points, 75.9% to 78.2% from 1994 to 1999. The two leading firms, Kroger and Winn-Dixie, counter and regain share. In addition, Meijer's enters and has captured 10.2% share by 1999. Wal-Mart's impact has been focused on the leading retailers, but, the long term effect of Wal-Mart's entry again has been negated by the reactionary countermeasures of the leading firms and by Meijer's entry.

19 St. Louis

Wal-Mart's share in 1993 was 3.1 with 3 stores. By 1999 Wal-Mart had 8 stores and 5.2% share. The four-firm concentration went up 3.7 points in that time, 76.4% to 81.1%. In 1995, National Supermarkets of Hazelwood, MO, the number two firm was sold to Schnuck, the market leader who divested 24 stores under FTC regulations[11]. Wal-Mart's long term impact is dwarfed by the sale of the number two firm in the market. Wal-Mart's share initially was obtained from the leading retailers in the market. Shifts in the market concentration caused by the sale of the number two firm make it hard to pinpoint the implications of Wal-Mart's entry.

[11] Trade Dimensions, *Marketing Guidebook 1996*.